

ASSIGNMENT BOOKLET
Bachelor's Degree Programme (B.Sc.)

GENETICS

Valid from 1st January, 2023 to 31st December, 2023

**It is compulsory to submit the Assignment before filling in the
Term-End Examination Form.**

Please Note

- You can take electives '56 to 64' credits from a minimum of TWO and a maximum of FOUR science disciplines, viz. Physics, Chemistry, Life Sciences and Mathematics.
- You can opt for elective courses worth a MINIMUM OF 8 CREDITS and a MAXIMUM OF 48 CREDITS from any of these four disciplines.
- At least 25% of the total credits that you register for in the elective courses from Life Sciences, Chemistry and Physics disciplines must be from the laboratory courses. For example, if you opt for a total of 64 credits of electives in these 3 disciplines, at least 16 credits 'out of those 64 credits' should be from lab courses.
- You cannot appear in the Term-End Examination of any course without registering for the course. Otherwise, your result will not be declared and the 'responsibility will be yours'.



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(2023)

We hope you are familiar with the system of evaluation to be followed for the Bachelor's Degree Programme. At this stage you may probably like to re-read the section on assignments for Elective Courses in the Programme Guide that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation which would consist of **one tutor-marked assignment (TMA)** for this course.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully.

- 1) On top of the first page of your TMA answer sheet, please write the details exactly in the following format:

ENROLMENT NO.:

NAME :

ADDRESS

.....

COURSE CODE :

COURSE TITLE :

ASSIGNMENT NO.:

STUDY CENTRE : DATE:

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

- 2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
- 3) Leave 4 cm margin on the left, top and bottom of your answer sheet.
- 4) Your answers should be precise.
- 5) While solving problems, clearly indicate the question number along with the part being solved. Be precise.
- 6) **This assignment will remain valid for one year from January 1, 2023 to December 31, 2023.** However, you are advised to submit it within **12 weeks** of receiving this booklet to accomplish its purpose as a teaching-tool. Answer sheets received after the due date shall not be accepted.
- 7) **You cannot fill the exam form for this course until you have submitted this assignment.**

We strongly feel that you should retain a copy of your assignment response to avoid any unforeseen situation and append, if possible, a photocopy of this booklet with your response.

We wish you good luck!

ASSIGNMENT
(Tutor Marked Assignment)

Course Code: LSE-03
Assignment Code: LSE-03/TMA/2023
Max. Marks: 100

1. Write short notes on the following: (2½×4 =10)
 - i) Segregation Law of Mendel
 - ii) Hardy Weinberg's law
 - iii) X -linked traits in humans
 - iv) Epistasis

2. a) What are multiple alleles? Explain giving a suitable example. (5×2 =10)
b) Describe packaging of DNA into chromosome.

3. Differentiate between the following: (2½×4 =10)
 - i) Phenotype and genotype
 - ii) DNA and RNA
 - iii) Deamination and Depurination
 - iv) T and B lymphocytes

4. What are autosomal and sex chromosome aneuploidies? Describe few of those found in humans. (10)

5. a) Describe Hershey and Chase experiment that proved that DNA is the hereditary material. (5×2=10)
b) Explain lytic cycle of a bacteriophage.

6. a) Explain Chargaff's rule. (5×2=10)
b) Define mutagenesis. What are major agents leading to mutagenesis?

7. Explain the model for regulation of the lac operon with the help of a well labelled diagram. (10)

8. Describe in brief the following: (2½×4 =10)
 - i) Chemical mutagens
 - ii) ABO Blood group system
 - iii) Autoimmune diseases
 - iv) Genetic counselling

9. a) Describe Griffith's experiment to show transformation in DNA. (5×2=10)
b) Genetic engineering can be used for improving nutritional value of food. Explain in detail.

10. Describe the various applications of genetic engineering. (10)